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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,261	12/01/2003	Sung Hoi Choi	61812-00003	3353

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EXAMINER	
RUTHKOSKY, MARK	

ART UNIT	PAPER NUMBER
1745	

MAIL DATE	DELIVERY MODE
06/01/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/726,261	CHOI, SUNG HOI	
	Examiner	Art Unit	
	Mark Ruthkosky	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-49* is/are pending in the application.

4a) Of the above claim(s) *38-47* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37,48 and 49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/7/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statement filed 12/7/2004 has been placed in the application file, and the information referred to therein has been considered as to the merits.

Drawings

The drawings filed on 12/1/2003 have been approved.

Election/Restrictions

Applicant's election with traverse of Group I in the reply filed on 3/6/2007 is acknowledged. The traversal is on the ground(s) that all claims are generally related to the electrochemical cell and can all be examined together. This is not found persuasive because the claims are distinct as noted in the restriction paper of 2/8/2007. Applicant has not addressed the reasons for restriction. Applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, (MPEP § 818.03(a)). The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-9, 18-22, 31-32, and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Heller (US 6,294,281.)

The instant claims are to an electrochemical cell for generating electrical energy from oxidation-reduction electron transfer, said electrochemical cell for use with active implantable medical devices, and said electrochemical cell comprising an anode having a first immobilized enzyme deposited on a first surface of said anode, said first immobile enzyme for catalyzing an electrooxidation of a reducing agent; a cathode having a second immobilized enzyme deposited on a second surface of said cathode, said second enzyme for catalyzing an electroreduction of an oxidizing agent, an aqueous solution containing said reducing agent and said oxidizing agent, said solution in contact with said first immobilized enzyme and said second immobilized enzyme; and a housing for providing mechanical support and electrical separation of said anode and said cathode.

Heller (US 6,294,281) teaches an electrochemical cell for generating electrical energy from oxidation-reduction electron transfer, said electrochemical cell for use with active implantable medical devices, and said electrochemical cell comprising an anode having a first immobilized enzyme deposited on a first surface of said anode, said first immobile enzyme for catalyzing an electrooxidation of a reducing agent; a cathode having a second immobilized enzyme deposited on a second surface of said cathode, said second enzyme for catalyzing an electroreduction of an oxidizing agent, an aqueous solution containing said reducing agent and said oxidizing agent, said solution in contact with said first immobilized enzyme and said second immobilized enzyme; and a housing for providing mechanical support and electrical separation of said anode and said cathode (see at least claims 1-29 and figures 1-5.) The electrochemical enzymes include glucose oxidase and lacasse immobilized on a substrate (see col. 3, lines 15-20, col. 4, lines 12-end, col. 5, lines 30-50, col. 12, lines 30-55; and col. 14, lines 35-60.) The substrate may include carbon, graphite, gold, platinum and titanium material in various shapes including rods (see col. 4, lines 12-end; col. 10, lines 25-40.) The electrodes may include an enzyme with a substrate in the form of a sol gel, which is a biocolloidal material (col. 12, lines 30-55.) The housing includes a permeable membrane for preventing macromolecules from entering the cell (see figures 3-5 and cols. 4 and 14.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 10-17, 23-30, 33- 37 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heller (US 6,294,281) as applied to claims 1-9, 18-22, 31-32, and 48 above, in view of Sobolewski (US 6,689,439), and further in view of Imazato (US 6,869,721.)

Heller (US 6,294,281) teaches an electrochemical cell for generating electrical energy from oxidation-reduction electron transfer, said electrochemical cell for use with active implantable medical devices, and said electrochemical cell comprising an anode having a first immobilized enzyme deposited on a first surface of said anode, said first immobile enzyme for catalyzing an electrooxidation of a reducing agent; a cathode having a second immobilized enzyme deposited on a second surface of said cathode, said second enzyme for catalyzing an electroreduction of an oxidizing agent, an aqueous solution containing said reducing agent and said oxidizing agent, said solution in contact with said first immobilized enzyme and said second immobilized enzyme; and a housing for providing mechanical support and electrical separation of said anode and said cathode (as previously noted.) Heller does not teach that the substrate comprises a plurality of nanostructured rods or wires. As noted, Heller teaches a substrate including carbon, graphite, gold, platinum and titanium material in various shapes including rods (see col. 4, lines 12-end; col. 10, lines 25-40.)

Sobolewski (US 6,689,439) teaches an electrochemical cell for generating electrical energy from oxidation-reduction electron transfer, said electrochemical cell including electrode substrates that include vertically formed, nanostructured rods and wires (see claims 1-26, figs. 1-4.) It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a substrate that comprises a plurality of nanostructured rods or wires as taught

by Sobolewski in order to improve conductivity in the electrode and provide appropriate gas diffusion and mechanical strength for a fuel cell electrode (see '439, col. 2, lines 45-65; col. 3, lines 45-55.)

Imazato (US 6,869,721) teaches an electrochemical cell for generating electrical energy from oxidation-reduction electron transfer, said electrochemical cell including electrode substrates that include nanostructured rods and wires (see claims 1-16, col. 4.) The rods may further comprise gold and titanium (see col. 3, lines 25-45.) It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a substrate that comprises a plurality of nanostructured rods or wires as taught by Imazato in order to improve conductivity in the electrode (see '721, col. 3, lines 35-40) and provide appropriate gas diffusion and mechanical strength for a fuel cell electrode (col. 4, lines 10-20.) The artesian would have found the claimed invention to be obvious in light of the teachings of the references.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited references include general teachings and relevant features as to the state of the art at the time of the invention.

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-

6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

Mark Ruthkosky
Primary Patent Examiner
Art Unit 1745

5.29.07